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CHAPTER II

TRANSMITTAL LETTER TO THE UNITED STATES ELECTED OFFICE (EO/US)

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

PCT/KR00/01026

INTERNATIONAL APPLICATION NO

8 September 2000 (08.09.00)

INTERNATIONAL FILING DATE

10 September 1999 (10.09.99)

PRIORITY DATE CLAIMED

THE SLIDING WINDOW AND DOOR SYSTEM OF FILLING A RAIL

TITLE OF INVENTION

Myung-shin PARK

APPLICANT(S)

Box PCT
ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

Attention: EO/US

1. This national phase application claims priority of the following national application(s):

Korean Patent Application No. 1999/38490 filed September 10, 1999.

2. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 USC 371:

- A. ☒ This express request to immediately begin national examination procedures (35 USC 371(f)).
- B. ☒ The U.S. National Fee (35 USC 371(c)(1) and other fees (37 CFR 1.492) indicated in the attached fee calculation sheet.

3. ☒ A copy of the International application as filed [35 USC 371(c)(2)]: 371(c)(3):

- a. ☐ is transmitted herewith.
- b. ☐ is not required as the application was filed with the United States Receiving Office.

c. ☒ has been transmitted

i. ☒ by the International Bureau. Date of mailing of the application (from form PCT/IB/308): 22 March 2001 (22.03.01).

ii. ☐ by applicant on (date) _____.

4. ☒ A translation of the International application into the English language [35 USC 371(c)(2)]:

a. ☐ is transmitted herewith.

b. ☒ is not required as the application was filed in English.

c. ☐ was previously transmitted by applicant on (date) _____.

d. ☐ will follow (within 32 months of earliest priority date).

5. ☒ Amendments to the claims of the International application under PCT Article 19 [35 USC 371(c)(3)]:

a. ☐ are transmitted herewith.

b. ☐ have been transmitted

i. ☐ by the International Bureau. Date of mailing of the amendment (from form PCT/IB/308): _____.

ii. ☐ by applicant on (date) _____.

c. ☒ have not been transmitted as

i. ☒ applicant chose not to make amendments under PCT Article 19. Date of mailing of Search Report (from form PCT/ISA/210): 28 December 2000 (28.12.00).

ii. ☐ the time limit for the submission of amendments has not yet expired. The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.

17(2)(a):

6. ☒ A translation of the amendments to the claims under PCT Article 19 [35 USC 371(c)(3)]:

a. ☐ is transmitted herewith.

b. ☐ is not required as the amendments were made in the English language.

c. ☒ has not been transmitted for reasons indicated at point 5c above.

7. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409)
- ☒ is transmitted herewith.
 - ☐ is not required as the application was filed with the United States Receiving Office.
8. ☒ Annex(es) to the International Preliminary Examination Report
- ☐ is/are transmitted herewith.
 - ☐ is/are not required as the application was filed with the United States Receiving Office.
 - ☒ is/are not being transmitted as there is/are no Annex(es).
9. ☒ A translation of the annexes to the International Preliminary Examination Report
- ☐ is transmitted herewith.
 - ☐ is not required as the annexes are in the English language.
 - ☒ is not being transmitted for the reason indicated at point 8c above.
10. ☒ An oath or declaration of the inventor [35 USC 371(c)(4)] complying with 35 USC 115
- ☐ was previously submitted by applicant on (date) _____.
 - ☒ is submitted herewith and such oath or declaration
 - ☐ is attached to the application
 - ☒ identifies the application and any amendments under PCT Article 19 which were transmitted as stated in points 5a or b; and states that they were reviewed by the inventor as required by 37 CFR 1.70.
 - ☐ will be provided in response to a Notice to File Missing Requirements.
11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
- ☐ is transmitted herewith.
 - ☒ has been transmitted by the International Bureau. Date of mailing (from form PCT/IB/308): 22 March 2001 (22.03.01).
 - ☐ is not required as the application was searched by the United States International Searching Authority.
 - ☐ will be transmitted promptly upon request.

e. ☐ has been submitted by applicant on (date) _____.

12. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98:

a. ☐ is transmitted herewith.

Also transmitted herewith is

☐ Form PTO-1449

☐ Copies of citations listed

b. ☐ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 USC 371(c).

c. ☐ was previously submitted by applicant on (date) _____.

13. ☐ The applicant claims small entity status with respect to this application.

☐ A Verified Statement Claiming Small Entity Status is attached.

☐ The undersigned claims small entity status on behalf of the applicant.

14. ☐ An assignment document is transmitted herewith for recording. A separate

☐ "RECORDATION COVER SHEET" is also attached.

15. ☒ Additional documents

a. ☐ Copy of request (PCT/RO/101)

b. ☒ International Publication No. WO 01/20115

i. ☐ Specification, claims and drawing

ii. ☒ Front page only

c. ☒ Preliminary amendment

d. ☒ Abstract

e. ☐ Other

16. ☒ The above checked items are being transmitted

a. ☒ before 30 months from any claimed priority date.

- b. ☐ after 30 months but before 32 months (surcharge and/or processing fee included) from any claimed priority date.

17. ☐ Certain requirements under 35 USC 371 were previously submitted by the applicant on _____, namely:

John Smith-Hill

John Smith-Hill
Reg. No. 27,730

SMITH-HILL & BEDELL, P.C.
12670 N.W. Barnes Road, Suite 104
Portland, Oregon 97229

(503) 574-3100

FEE CALCULATION SHEET Entry into National Phase of PCT/KR00/01026

| CLAIMS FEE | (1) FOR | (2) NUMBER FILED | (3) NUMBER EXTRA | (4) RATE | (5) CALCULATIONS |
|--------------|--|------------------|------------------|-----------|------------------|
| * [] | TOTAL CLAIMS 3 | -20 = | 0 | x \$ 18 = | \$ 0 |
| | INDEPENDENT CLAIMS 1 | - 3 = | 0 | x \$ 84 = | \$ 0 |
| | MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + \$280 = | \$ 0 |
| BASIC FEE | <input type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO <input type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national state (37 CFR 1.492(a)(4)) \$100 <input type="checkbox"/> and the above requirements are not met (37 CFR 1.492(a)(1)) \$710 <input checked="" type="checkbox"/> U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: <input type="checkbox"/> has been paid (37 CFR 1.492(a)(2)) \$740 <input checked="" type="checkbox"/> has not been paid (37 CFR 1.492(a)(3)) \$1,040 <input type="checkbox"/> where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5)) \$890 | | | | 1,040 |
| OTHER FEES | Surcharge of \$130 for furnishing the oath or declaration later than 30 months (but no later than 32 months) from any claimed priority date (37 CFR 1.492(e) and 37 CFR 1.495(c)). | | | | + |
| | Total of above Calculations | | | | = 1,040 |
| SMALL ENTITY | Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also. (note 37 CFR 1.9, 1.27, 1.28) | | | | - |
| | Subtotal | | | | 1,040 |
| | Processing fee of \$130 for furnishing the English Translation later than 30 months (but not later than 32 months) from any claimed priority date (37 CFR 1.492(f) and 37 CFR 1.495(c)). | | | | + |
| | Total Basic Fee | | | | \$ 1,040 |
| | Fee for recording the enclosed assignment document \$40 (37 CFR 1.21(h)) | | | | + |
| TOTAL | TOTAL FEES ENCLOSED | | | | \$ 1,040 |

* See attached Preliminary Amendment.

[x] A check in the amount of \$1,040 to cover the fee under 37 CFR 1.492(a)(3) is enclosed.

[x] Please charge any additional basic filing fee under 37 CFR 1.492(a) which may be required by this paper, or credit any overpayment to Deposit Account No. 19-2560. (Do not charge additional claim fees under 37 CFR 1.492(b) or 1.492(c) or the surcharge for belated filing of the Declaration under 37 CFR 1.492(e) to the Deposit Account.) This sheet is filed in duplicate.

Penelope Stockwell

10/070980

JC13 Rec'd PCT/PTO 07 MAR 2002

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Myung-shin PARK

Art Unit:

Application No:

Examiner:

Filed:

For: THE SLIDING WINDOW AND DOOR SYSTEM OF
FILLING A RAIL

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please make the following amendments to this application prior
to examination thereof.

AMENDMENTS

In the Claims:

Claim 3, cancel.


Add new claim as follows:

4. (New) The sliding window and door system of claim 1,
wherein the window leaves (or door leaves) from an outside or the
window leaves (or door leaves) from an inside are replaced with
fixed windows (or fixed doors) and finished up with gaskets and a
groove in a portion where the fixed windows (or fixed doors) are not
mounted is finished up with a fixed window (or fixed door) groove
cover.

REMARKS

The above amendments are presented in order to place this
application in better condition for examination.

Respectfully submitted,



John Smith-Hill
Reg. No. 27,730

SMITH-HILL & BEDELL, P.C.
12670 N.W. Barnes Road, Suite 104
Portland, Oregon 97229

Tel. (503) 574-3100
Fax (503) 574-3197

Docket: MUTU 2434

10070980.030702

THE SLIDING WINDOW AND DOOR SYSTEM OF FILLING A RAIL

A sliding door system acts as the same with a sliding window system in the specification, and thus description of the window includes description of the door.

TECHNICAL FIELD

The present invention relates to a sliding window and door system, which cuts off external dust, rainwater, air, noise, and heat by mounting a window frame provided with upper, lower, left, and right members assembled in a rectangular shape on a wall and mounting a window leaf provided with upper, lower, left, and right members assembled in a rectangular shape in the window frame.

BACKGROUND ART

A related art window and door system will be described with reference to the accompanying drawings.

FIG. 1 is a front view showing a window and door to which a related art window and door system is applied. FIG. 2 is a sectional view taken along line A-A of FIG. 1.

The related art window and door system includes a window frame lower member 1 and window leaf lower members 2a and 2b. The window frame lower member 1 is provided with exposed rails 11 and 11. The window

leaf lower members 2a and 2b are provided with rollers 21 and 21 mounted and arranged on the rails 11, and are guided by mohair members 22, 22, 22, and 22 and the rails 11 and 11 to open and close.

In the aforementioned related art window and door system, since the window leaf is opened and closed depending on the exposed rails, rainwater is drained out between the rails. For this reason, air tightness, water tightness, and thermal insulation cannot be improved. This could lead to low energy efficiency.

Furthermore, since the window leaf is inserted into the window frame, it is simple to assembly and disassembly the window leaf. However, it is likely that the window leaf is detached due to strong wind or manipulation. Accordingly, when the window leaf is used in a multistoried building, the window leaf is likely to be fallen down by being detached from the window frame. This causes dangerous situations.

Moreover, since stains of dust and rainwater piled between the rails are not easily removed, cleaning is difficult. If the piled dust is left uncleaned, the piled dust is raised when opening and closing the window leaf, thereby causing the air to be impure. It is therefore difficult to maintain a clean state. If a drainage outlet for rainwater between the rails is blocked by the dust and the like, or in case of a heavy rain accompanied by strong wind, damage may occur due to the rainwater. Also, an uneven lower structure has limitation in improving the appearance of the window and door system.

DISCLOSURE OF THE INVENTION

Accordingly, the present invention is directed to a sliding window and door system that substantially obviate one or more of the problems due to limitations and disadvantages of the related art.

An object of the present invention is to provide a sliding window and door system of filling a rail having an even structure to remarkably improve air tightness, water tightness, and thermal insulation.

Another object of the present invention is to provide a sliding window and door system, which is likely to maintain a cleaning state and prevents a window leaf from being detached, thereby ensuring stability.

Other object of the present invention is to provide a sliding window and door system, which is likely to improve appearance depending on taste and functions, thereby providing high quality.

Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention will be realized and attained by the structure particularly pointed out in the written description and claims thereof as well as the appended drawings.

To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, a sliding window and door system according to the present invention includes: a window frame (or door frame) lower member provided with surface

members and rail filling device grooves in a window frame (or door frame) base member, for inserting rail filling devices into the rail filling device grooves, the rail filling devices including a rail filling device base member corresponding to the rail filling device grooves, a rail filling member, and a roller supporting member; window leaf (or door leaf) lower members for driving height control rollers provided with projections to correspond to the rail filling systems by inserting the control rollers into roller grooves formed in window leaf (or door leaf) base members to be guided by the projections and the rail filling devices, and for mounting gaskets to maintain air tightness between the window leaf base members and the surface members; a window frame (or door frame) upper member having a window frame (or door frame) base member similar to the window frame base member of the window frame lower member, except that the rail filling device grooves correspond to supporting grooves to which upper insertion portions of window leaf (or door leaf) upper members are inserted; and the window leaf upper members provided with control rollers mounted in the upper insertion portions to prevent the window leaf from being detached, thereby forming an even structure.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with

the description serve to explain the principles of the invention.

In the drawings:

FIG. 1 is a front view showing a window and door to which a related art window and door system is applied;

FIG. 2 is a sectional view taken along line A-A of FIG. 1;

FIG. 3 is a front view showing a window and door to which a window and door system according to the present invention is applied;

FIG. 4 is a sectional view taken along line B-B of FIG. 3;

FIG. 5 is a schematic view showing a rail filling system of FIG. 4;

FIG. 6 shows another embodiment of FIG. 4;

FIG. 7 shows other embodiment of FIG. 4;

FIG. 8 is a sectional view taken along line C-C of FIG. 3;

FIG. 9 is an installation view of a detachment prevention roller of FIG. 8;

FIG. 10 shows another embodiment of FIG. 8;

FIG. 11 shows other embodiment of FIG. 8;

FIG. 12 is a front view showing a window and door viewed from an outside, in which an outdoor window leaf (or door leaf) is replaced with a fixed window (or fixed door);

FIG. 13 is a sectional view taken along line D-D of FIG. 12;

FIG. 14 is a sectional view taken along line E-E of FIG. 12;

FIG. 15 is a front view showing a window and door viewed from an outside, in which an indoor window leaf (or door leaf) is replaced with a fixed

window (or fixed door);

FIG. 16 is a sectional view taken along line F-F of FIG. 15;

FIG. 17 is a sectional view taken along line G-G of FIG. 15; and

FIG. 18 is an installation view of a fixed window (or fixed door) groove cover.

BEST MODE FOR CARRYING OUT THE INVENTION

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

"Outdoor" and "indoor" which will now be described in sectional views respectively mean "left side" and "right side" on the drawings.

FIG. 3 is a front view showing a window and door viewed from an outside, to which a window and door system according to the present invention is applied. Sectional views taken along lines B-B and C-C are shown in FIGS. 4, 6, 7, 8, 10, and 11.

FIGS. 4, 6, and 7 are sectional views taken along line B-B of FIG. 3, in which main elements of a sliding window and door system are shown.

Referring to FIG. 4, a window frame lower member 3 includes a window frame base member 31, surface members 32, 32, and 32, rail filling device grooves 33 and 33, and rail filling devices 38 and 38. The rail filling device grooves 33 and 33 for installation of the rail filling devices 38 and 38 and the surface members 32, 32, and 32 are provided in the window frame base member 31. The rail filling device 38 having a rail filling device base

The construction of window leaf lower members 4a and 4b will now be described. Height control rollers 42 and 42 provided with projections 41 and 41 to correspond to the rail filling devices 38 and 38 are inserted into roller grooves 44 and 44 provided in window leaf base members 43 and 43, so that the rollers 42 and 42 are guided and driven by the projections 41 and 41 and the rail filling devices 38 and 38. To maintain air tightness between the window leaf base members 43 and 43 and the surface members 32, 32 and 32, gaskets 45, 45, 45 and 45 are mounted. Thus, the window leaf lower members 4a and 4b can correspond to the window frame lower member 3.

The operation and driving principles of the height control rollers 42 and 42 provided with the projections 41 and 41 of the window leaf lower members 4a and 4b and the rail filling devices 38 and 38 of the window frame lower member 3 will be described below.

The projections 41 and 41 of the rollers 42 and 42 push the rail filling member 36 of the rail filling devices 38 and 38 and contracts the elastic member 35. Thus, the projections are inserted into the grooves provided between the roller supporting members 37. The rollers 42 and 42 are guided

to the grooves between the roller supporting members 37 and then driven. If the rollers 42 and 42 are driven, the contracted elastic member 35 is returned to its original state and the rail filling member 36 fills the grooves between the roller supporting members 37 to form an even surface.

In FIGS. 6 and 7, to form the even structure of FIG. 4 in a frame type structure, window frame lower members 5 and 6 include surface members 52, 52, 52, 62, 62, and 62 provided in window frame base members 51 and 61 in a frame type. In this case, rainwater is smoothly guided to the outside.

Heights of window leaf lower members 7a and 7b are controlled to correspond to the window frame lower members 5 and 6.

FIGS. 8, 10, and 11 are sectional views taken along line C-C of FIG. 3, in which main elements of a sliding window and door system are shown.

In FIG. 8, a window frame base member 81 of a window frame upper member 8 is similar to the window frame base member 31 of the window frame lower member, but is mounted in an upper side of the window and door system. In this case, the rail filling device grooves 33 and 33 correspond to supporting grooves 82 and 82, to which upper insertion portions 91 and 91 of window leaf upper members 9a and 9b are inserted.

The window leaf upper members 9a and 9b include the upper insertion portions 91 and 91 to correspond to the window frame upper member 8. Control rollers 93 and 93 for preventing the window leaf from being detached by cutting a cutting portion 92 of the upper insertion portions 91 and 91 are mounted in the window leaf upper members 9a and 9b (see

installation view of FIG. 9).

The construction of preventing the window leaf from being detached will be described below.

For installation of the upper insertion portions 91 and 91, the height of the control rollers 93 and 93 is downwardly controlled. The upper insertion portions 91 and 91 are deeply inserted into the supporting grooves 82 and 82 to facilitate installation of the lower member. After installation of the lower member, an inner space formed between the upper insertion portions 91 and 91 and the supporting grooves 82 and 82 is finished up by upwardly controlling the height of the control rollers 93 and 93.

FIG. 8 shows an installation state, in which the window leaf upper members 9a and 9b cannot be detached due to the control rollers 93 and 93.

Since the window frame base member 81 of the window frame upper member 8 is equivalent to the window frame base member 31 of the window frame lower member 3, the even structure can be constructed in a frame type structure.

In FIGS. 10 and 11, window frame upper members 10 and 20 of a frame type structure and window leaf upper members 30a and 30b are shown. The height of the window leaf upper members 30a and 30b is controlled to correspond to the window frame upper members 10 and 20.

FIG. 12 is a front view showing a window and door viewed from an outside, in which an outdoor window leaf is replaced with a fixed window. FIGS. 13 and 14 are sectional views taken along lines D-D and E-E of FIG.

12.

In FIG. 13, the window leaf lower member 3 is replaced with an outdoor window leaf 4a in such a manner that a fixed window 40 is mounted into an outdoor rail filling device groove 39, and finished up with a gasket 401 and a supporting member 402.

In FIG. 14, a window frame upper member 8 is replaced with an outdoor window leaf 9a in such a manner that a fixed window 40 is mounted into an indoor supporting groove 83 and finished up with a gasket 401.

FIG. 15 is a front view showing a window and door viewed from an outside, in which an indoor window leaf is replaced with a fixed window. FIGS. 16 and 17 are sectional views taken along lines F-F and G-G of FIG. 15.

In FIG. 16, the window leaf lower member 3 is replaced with an indoor window leaf 4b in such a manner that a fixed window 50 is mounted into an indoor rail filling device groove 3a and finished up with gaskets 501 and 501 and a supporting member 502.

In FIG. 17, a window frame upper member 8 is replaced with an indoor window leaf 9b in such a manner that a fixed window 50 is mounted into an indoor supporting groove 84 and finished up with gaskets 501 and 501.

In FIG. 18, a groove 50 in a portion having no fixed windows 40 and 50 in FIGS. 13, 14, 16 and 17 is finished up with a fixed window groove cover 70.

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INDUSTRIAL APPLICABILITY

As aforementioned, the sliding window and door system according to the present invention has the following advantages.

In the related art, a drainage outlet is provided in a rail to drain out rainwater because the rail is exposed. However, in the present invention, rainwater is guided to the outside on the surface. Accordingly, the rainwater is essentially prevented from being induced into the indoor. Also, since no separate drainage outlet is provided, air tightness, water tightness, and thermal insulation can be improved. Since the process steps can be reduced, the productivity can be improved.

In the upper structure, a detachment prevention structure is applied, so that vertical movement of the window leaf in the upper and lower directions can be avoided. Accordingly, safety can be ensured by solving the problem related to detachment due to strong wind or manipulation.

The related art window and door system has a problem in that movement and noise of the window leaf occur and a window frame should be exchanged with another one if the rail is abraded. However, in the present invention, a rail filling system is only to be exchanged with another one if the rail is abraded. Accordingly, the production cost and time can be reduced.

Furthermore, in the present invention, since an even structure not an uneven structure is formed, pile of dust is avoided and it is easy to maintain cleaning state. Appearance such as an even type and a frame type can be improved depending on taste and function. Thus, a window and door system

of high quality can be obtained.

While the present invention has been described and illustrated herein with reference to the preferred embodiments thereof, it will be apparent to those skilled in the art that various modifications and variations can be made therein without departing from the spirit and scope of the invention. Thus, it is intended that the present invention covers the modifications and variations of this invention that come within the scope of the appended claims and their equivalents.

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WHAT IS CLAIMED IS:

1. A sliding window and door system comprising:

a window frame (or door frame) lower member (3) provided with surface members (32,32,32) and rail filling device grooves (33,33) in a window frame (or door frame) base member (31), for inserting rail filling devices (38,38) into the rail filling device grooves (33,33), the rail filling devices (38,38) comprising a rail filling device base member (34) corresponding to the rail filling device grooves (33,33), an elastic member (35), a rail filling member (36), and a roller supporting member (37);

window leaf (or door leaf) lower members (4a,4b) for driving height control rollers (42,42) provided with projections (41,41) to correspond to the rail filling devices (38,38) by inserting the control rollers (42,42) into roller grooves (44,44) formed in window leaf (or door leaf) base members (43,43) to be guided by the projections (41,41) and the rail filling devices (38,38), and for mounting gaskets (45,45,45,45) to maintain air tightness between the window leaf base members (43,43) and the surface members (32,32,32);

a window frame (or door frame) upper member (8) having a window frame (or door frame) base member (81) similar to the window frame base member (31) of the window frame lower member (3), except that rail filling device grooves (33,33) correspond to supporting grooves (82,82) to which upper insertion portions (91,91) of window leaf (or door leaf) upper members (9a,9b) are inserted; and

the window leaf upper members (9a,9b) provided with control rollers

(93,93) mounted in the upper insertion portions (91,91) to prevent the window leaf from being detached, thereby forming an even structure.

2. The sliding window and door system of claim 1, further comprising:

 window frame (or door frame) lower members (5,6) provided with surface members (52,52,52,62,62,62) in a frame type;

 window leaf (or door leaf) lower members (7a,7b) having a height controlled to correspond to the window frame lower members (5,6);

 window frame (or door frame) upper members (10,20) provided with surface members (102,102,102,202,202,202) formed in a frame type; and

 window leaf (or door leaf) upper members (30a,30b) having a height controlled to correspond to the window frame upper members (10,20), thereby forming a frame type structure.

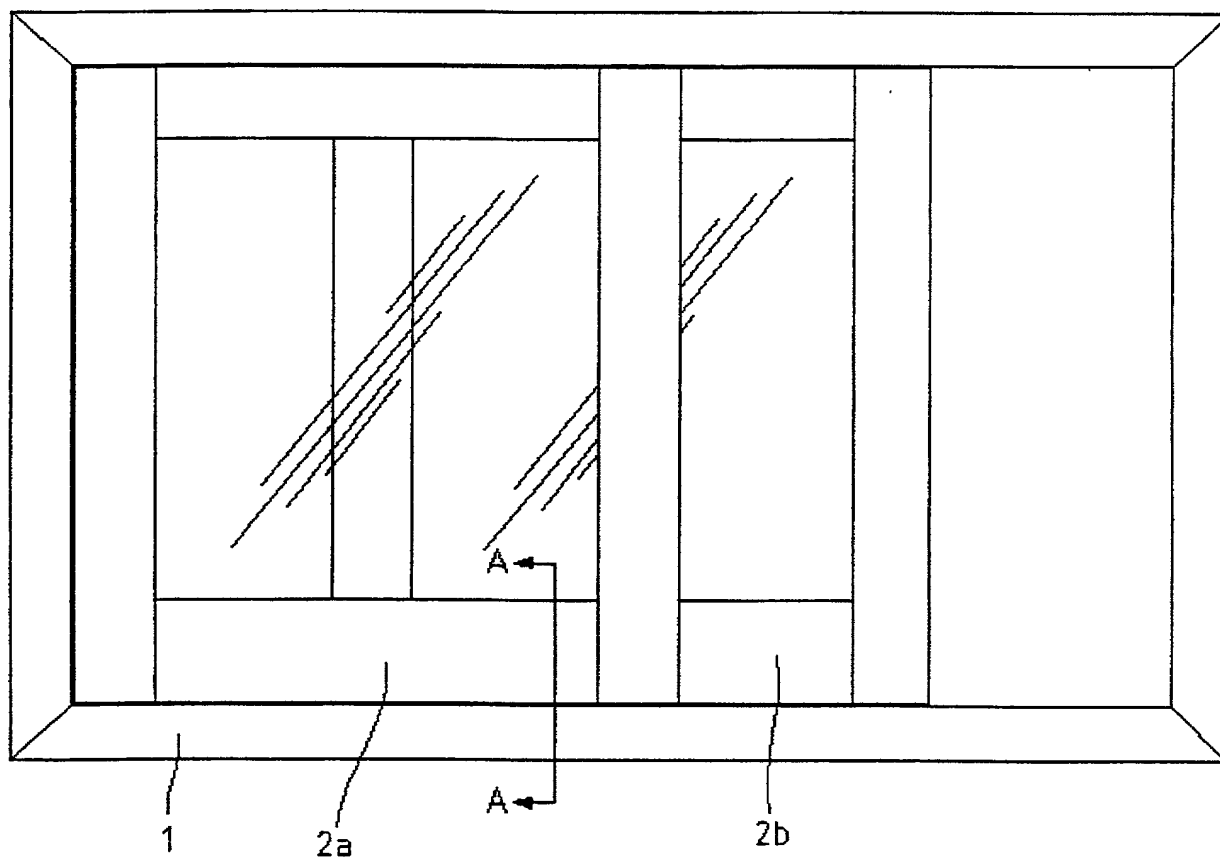
3. The sliding window and door system of claim 1 or 2, wherein the window leaves (or door leaves) (4a,7a,9a,30a) from an outside or the window leaves (or door leaves) (4b,7b,9b,30b) from an inside are replaced with fixed windows (or fixed doors) (40,50) and finished up with gaskets (401,401,501,501), and a groove (60) in a portion where the fixed windows (or fixed doors) are not mounted is finished up with a fixed window (or fixed door) groove cover (70).

ABSTRACT

A sliding window and door system includes a window frame lower member provided with surface members and rail filling device grooves in a window frame base member, a window frame upper member having a window frame base member similar to the window frame base member of the window frame lower member, and rail filing device grooves acting as supporting grooves to which upper insertion portions of window leaf upper members are inserted, the window leaf upper members being provided with control rollers mounted in the upper insertion portions to prevent the window leaf from being detached, thereby forming a even structure.

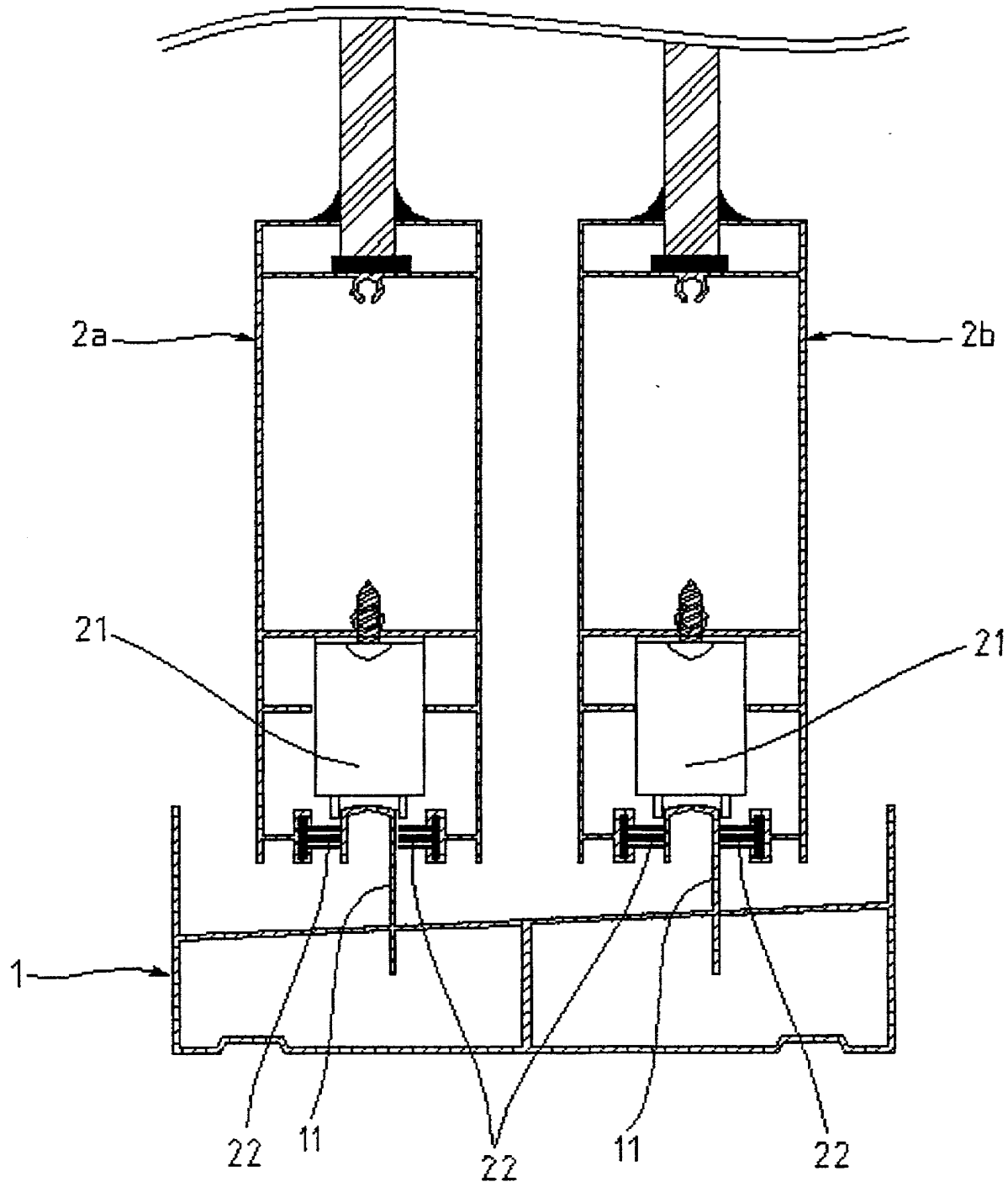
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FIG. 1



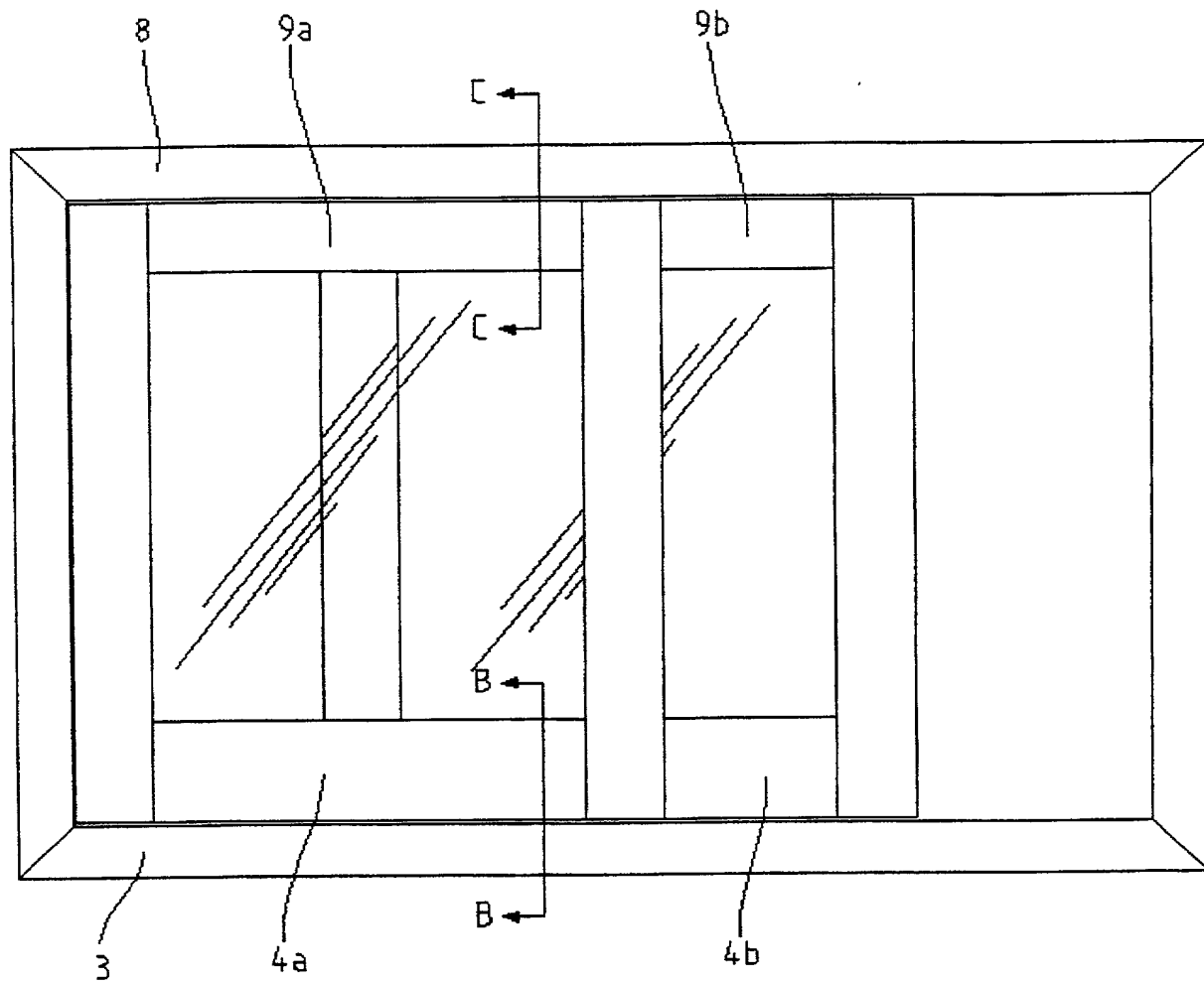
2/18

FIG. 2



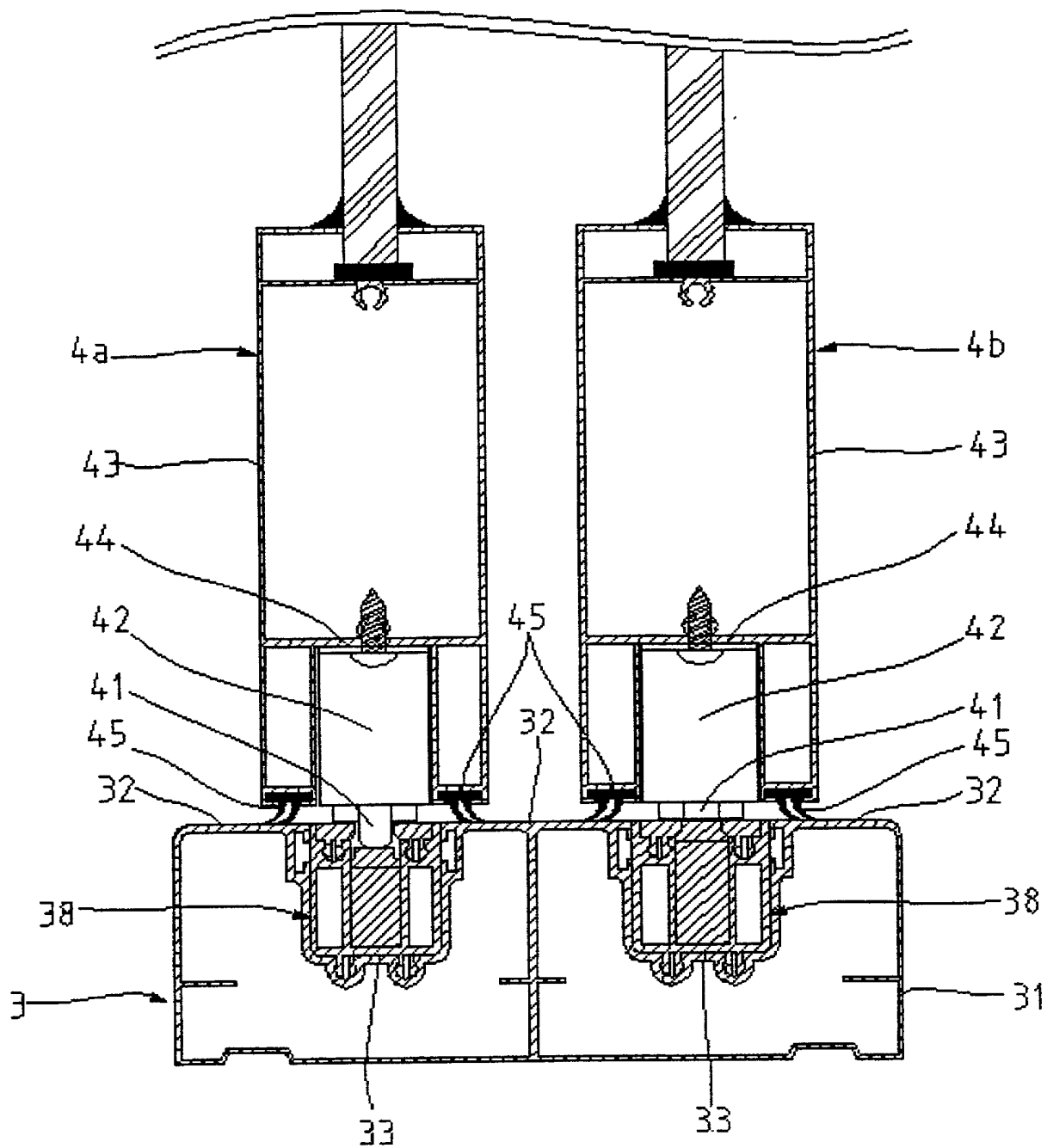
3/18

FIG. 3



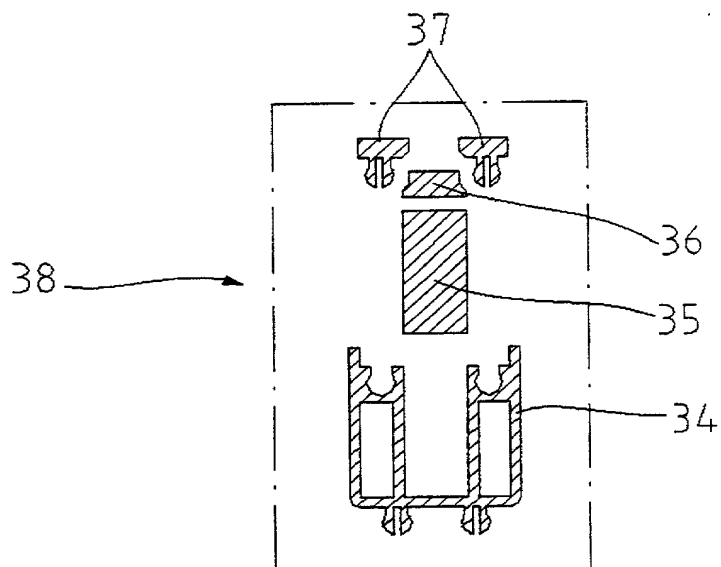
4/18

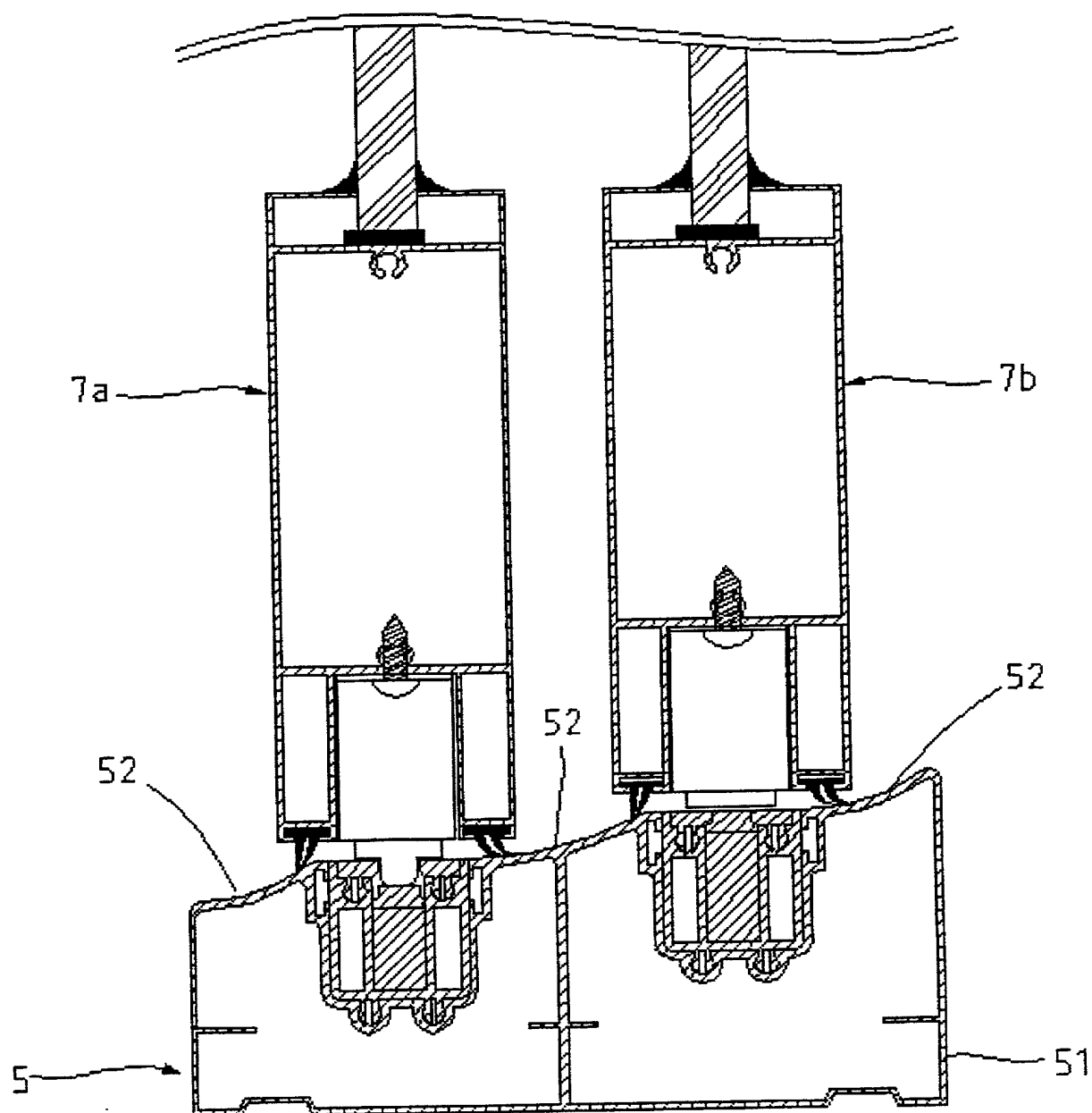
FIG. 4



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FIG. 5





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FIG. 7

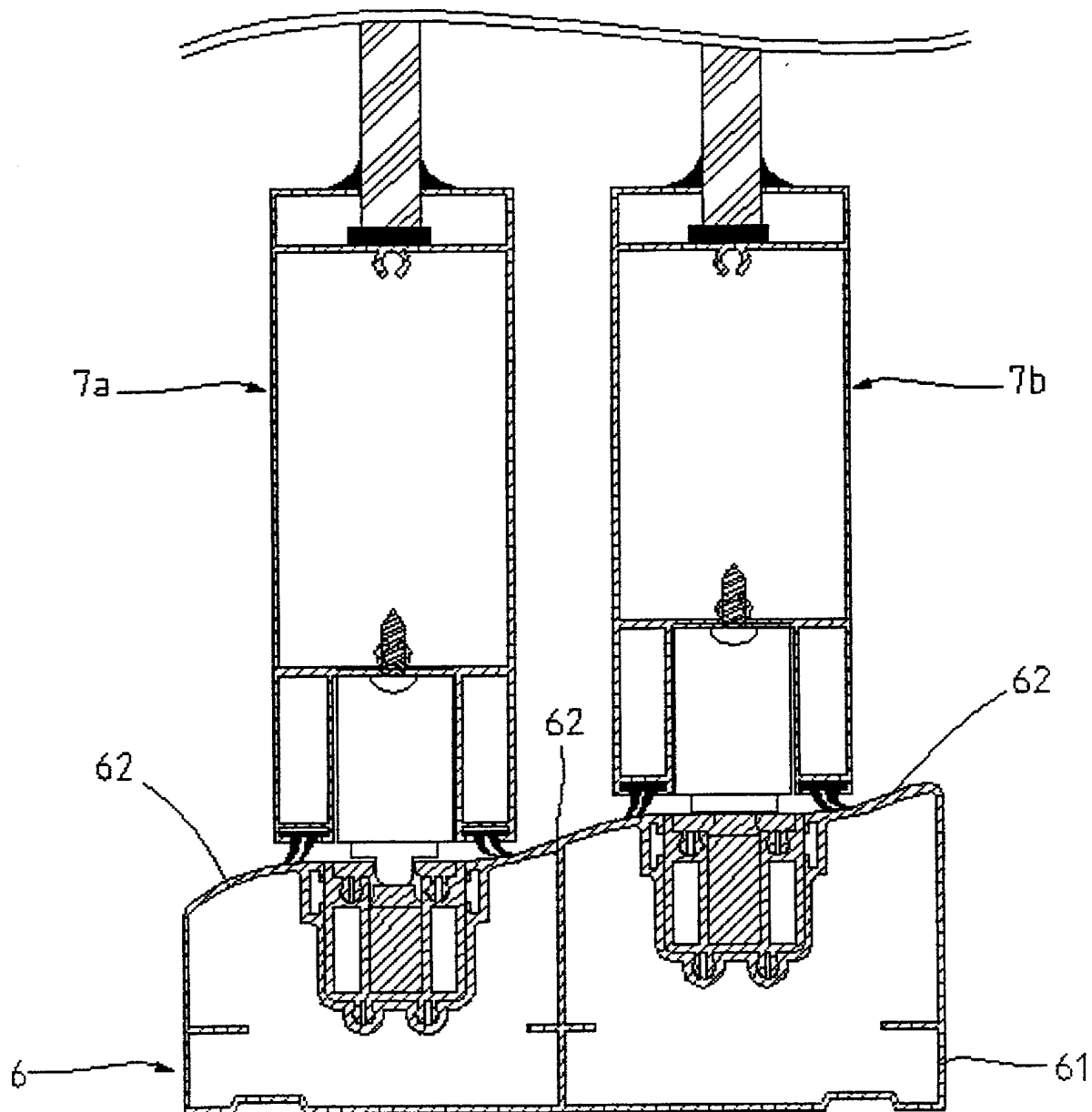
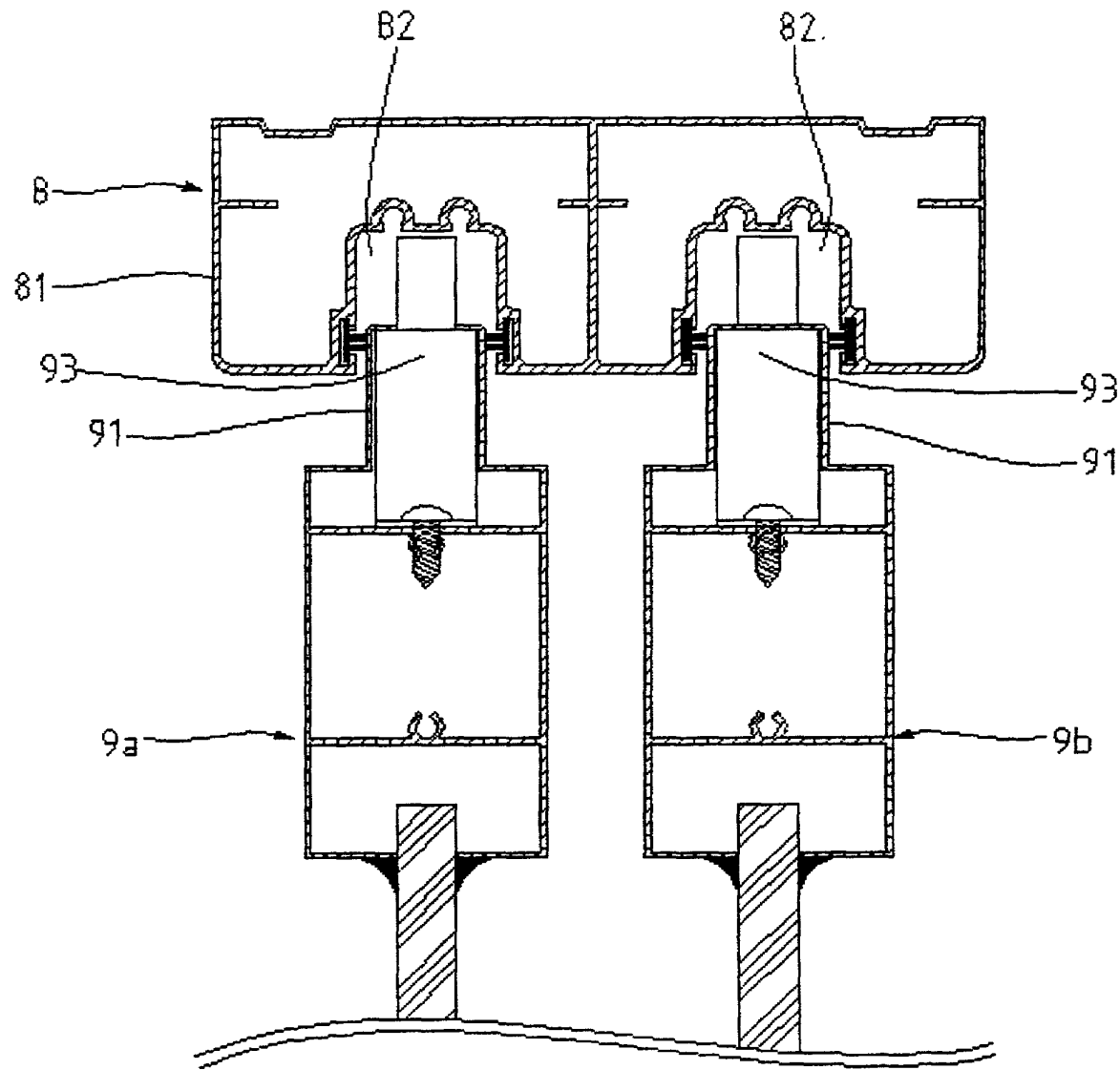
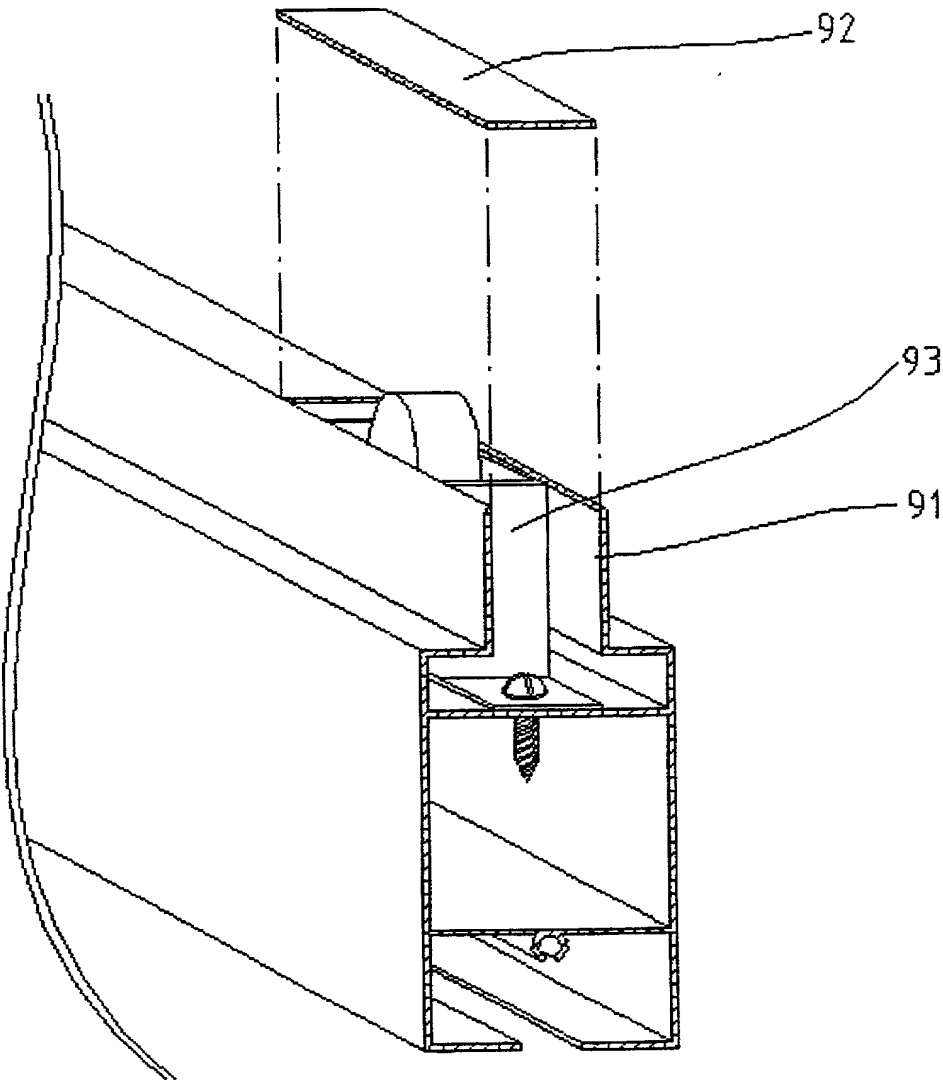


FIG. 8



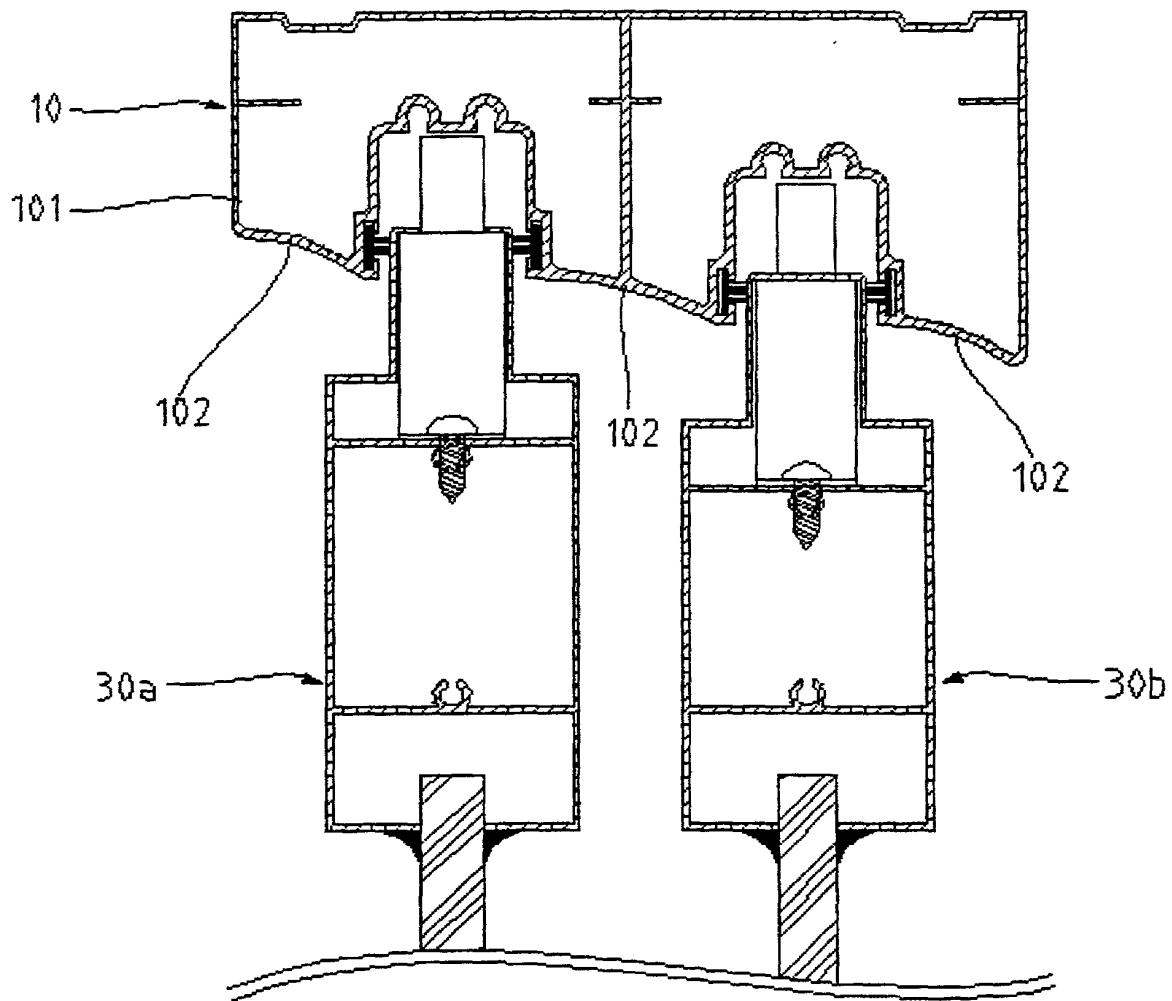
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FIG. 9



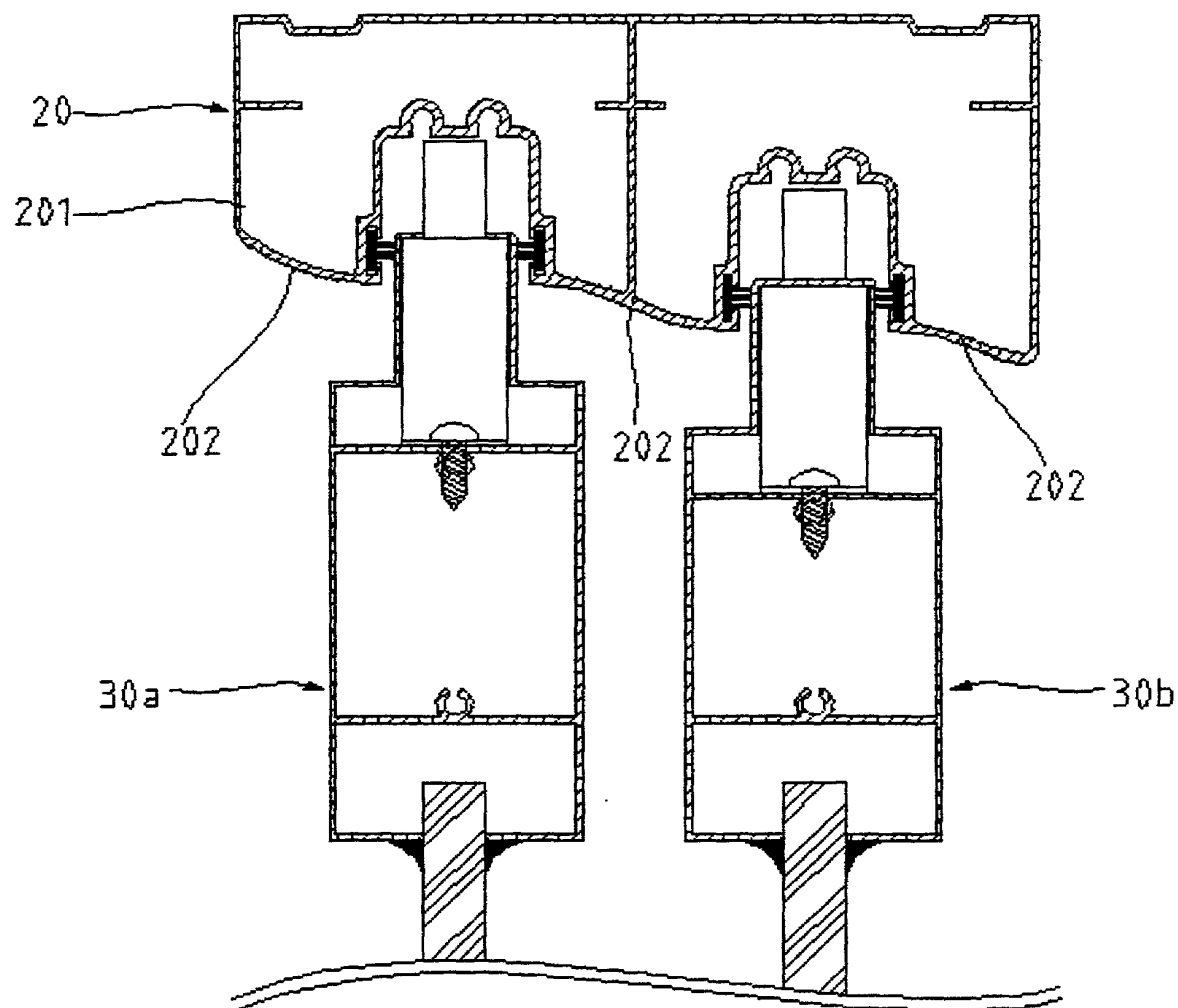
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FIG. 10



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FIG. 11



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FIG. 12

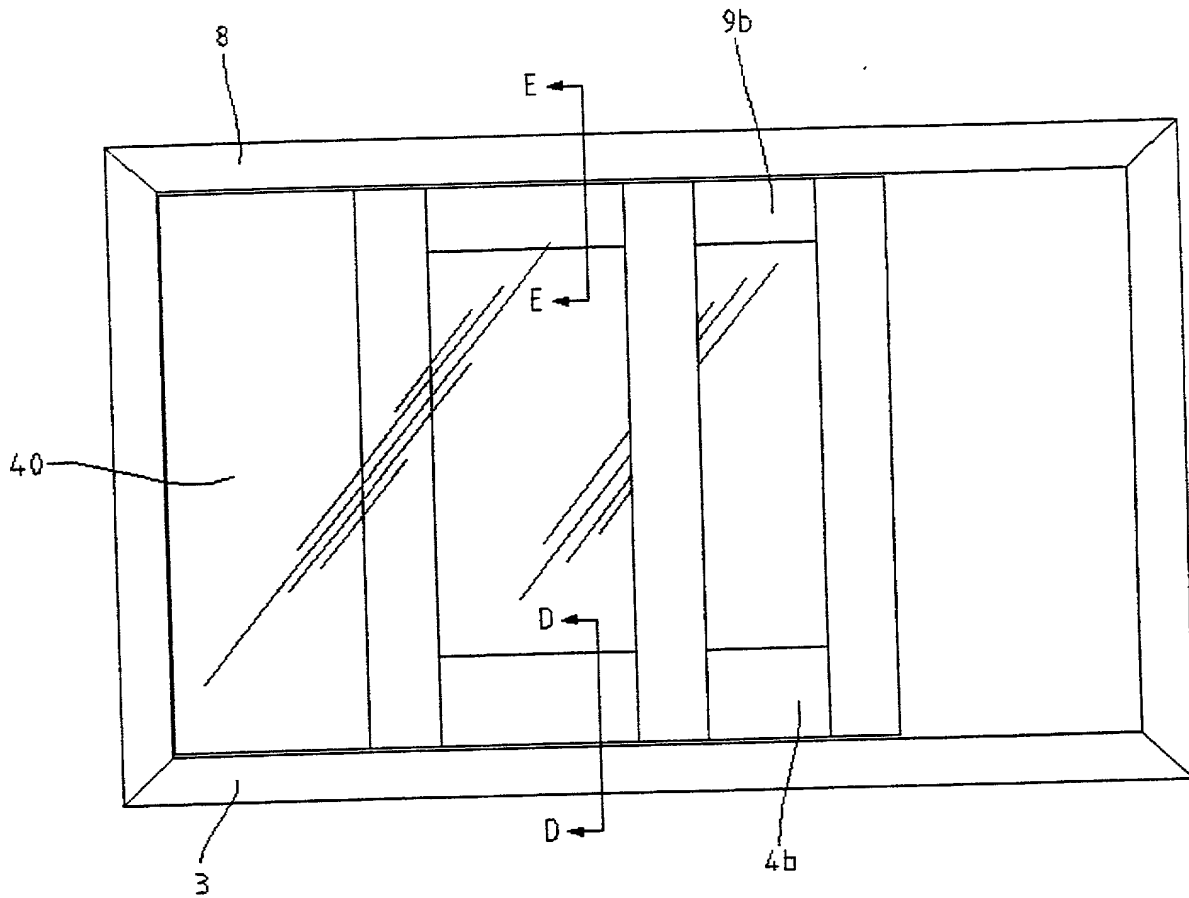
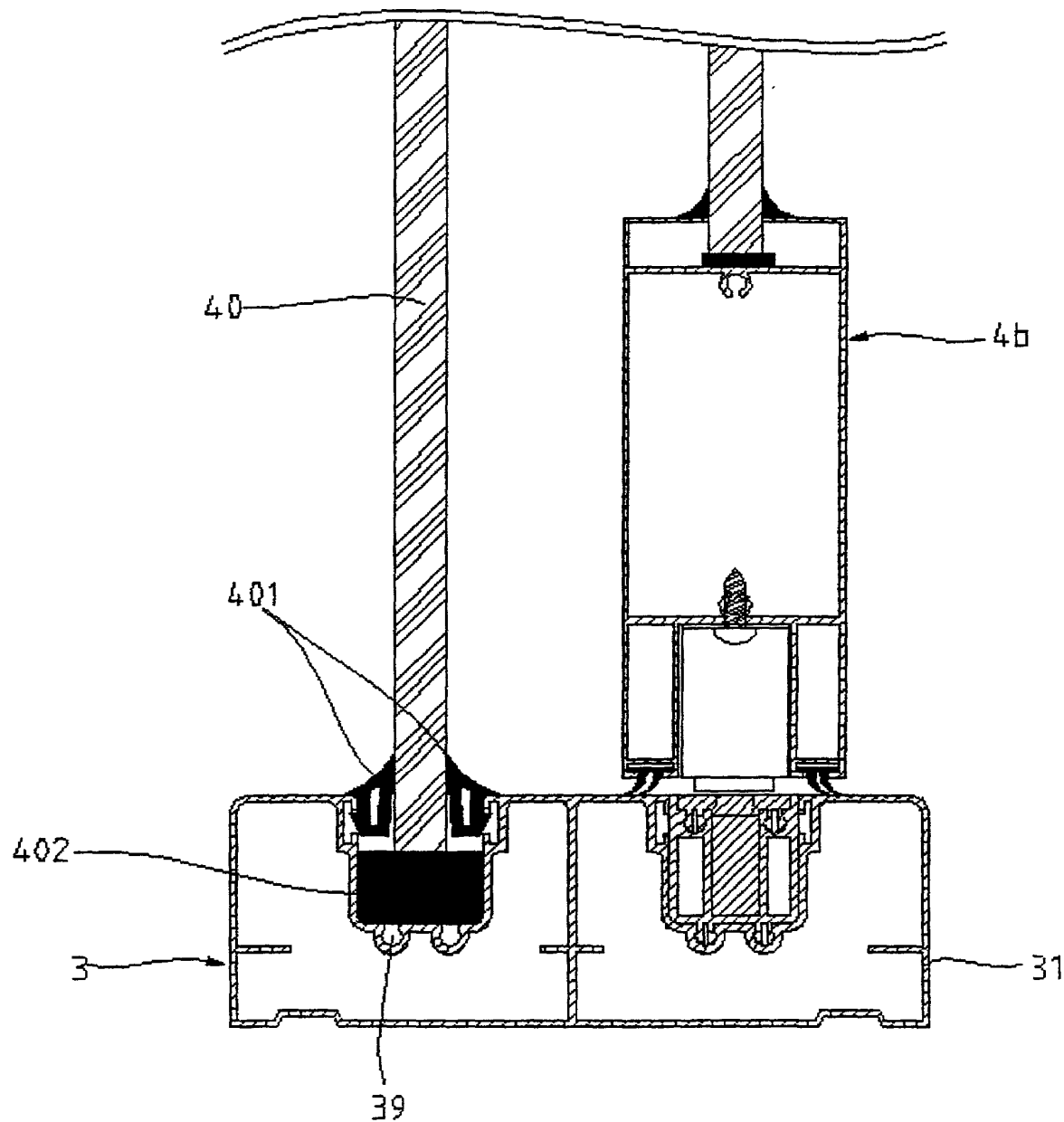
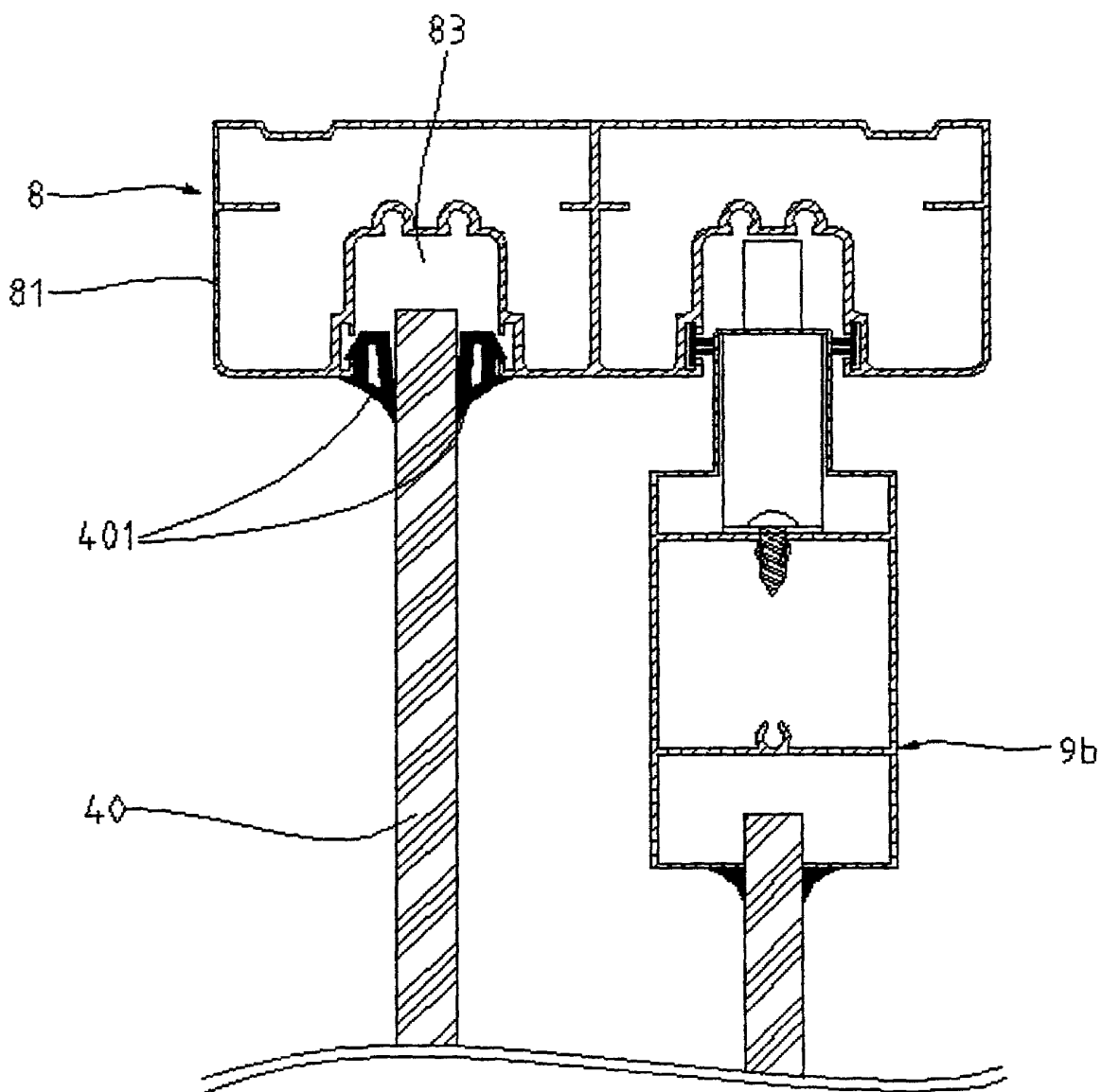


FIG. 13



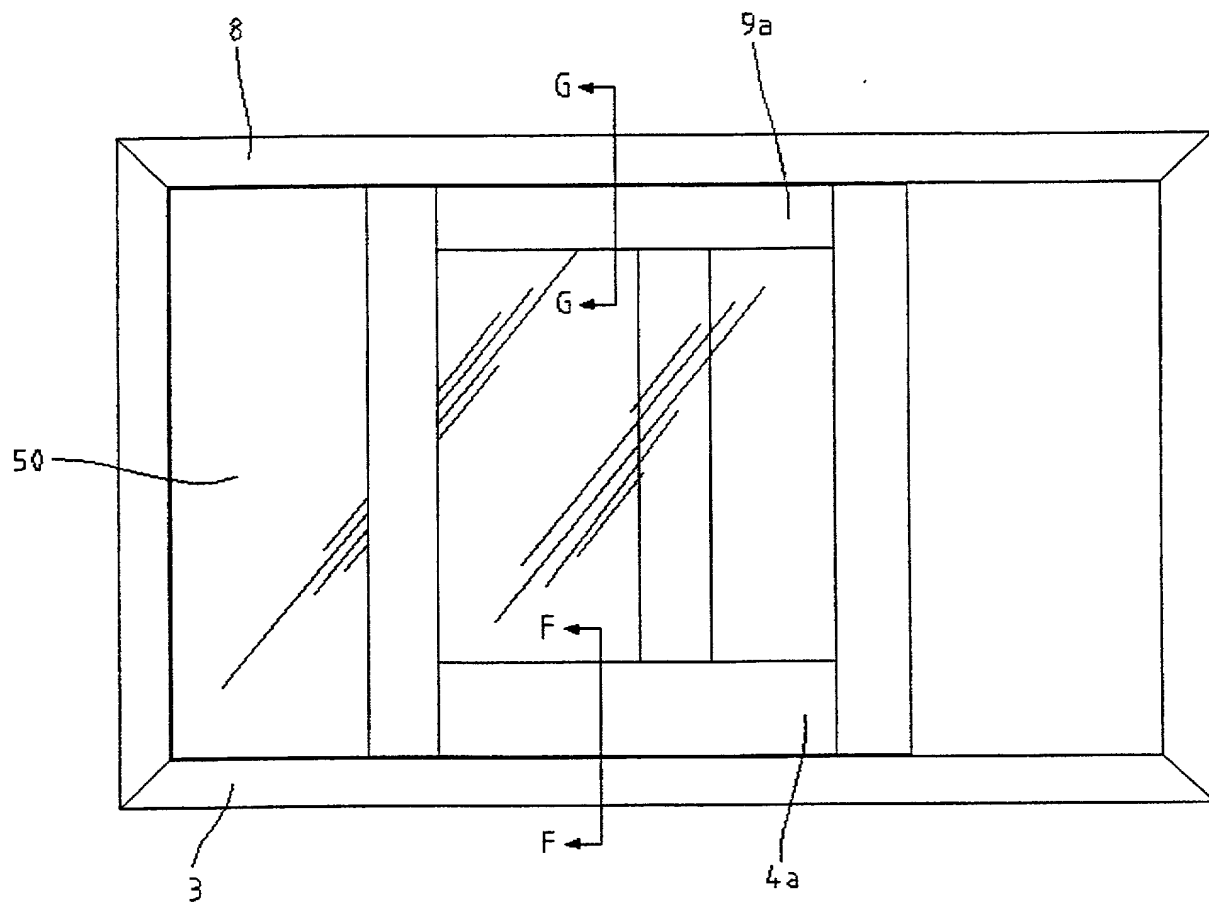
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FIG. 14



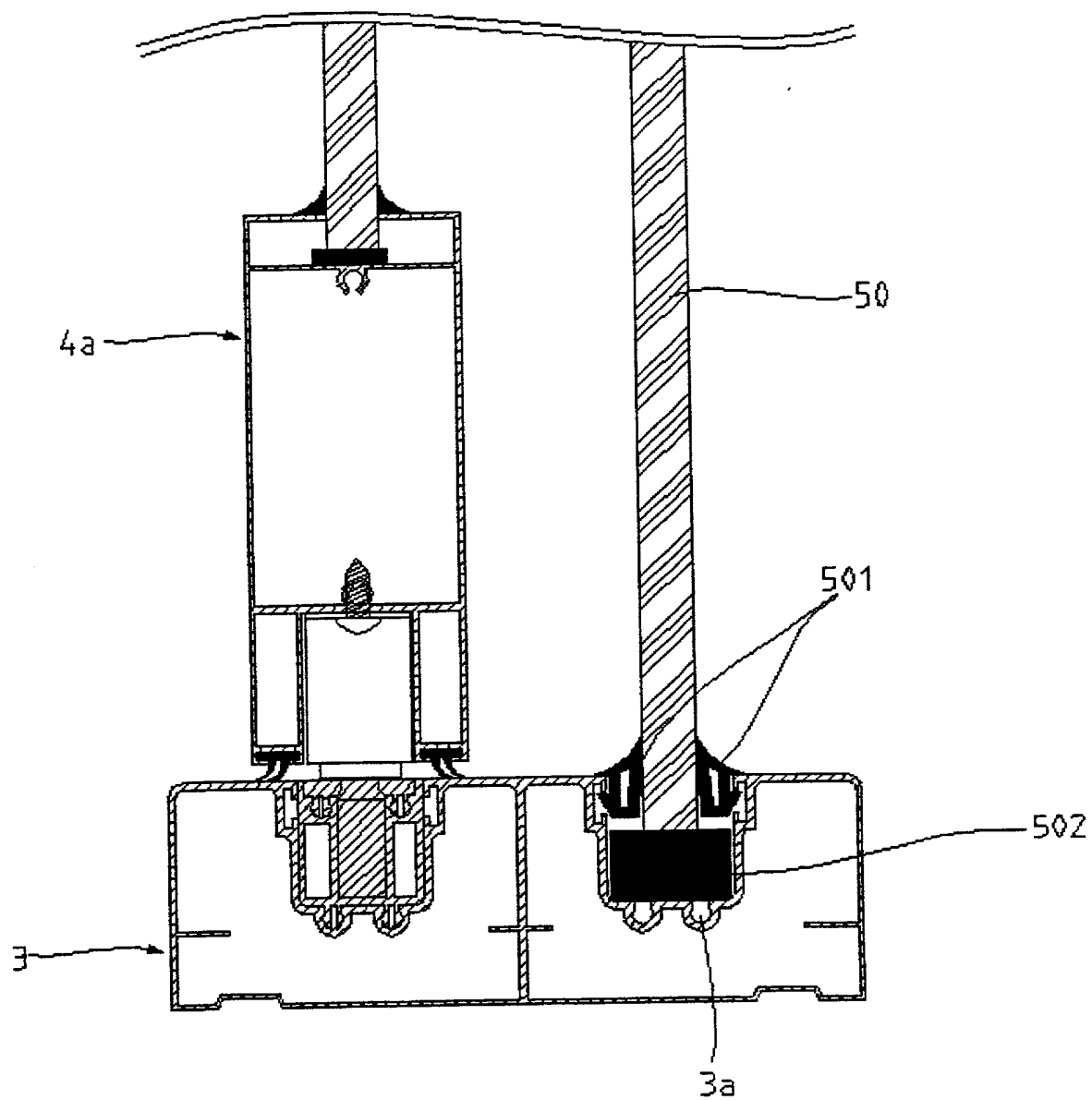
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FIG. 15



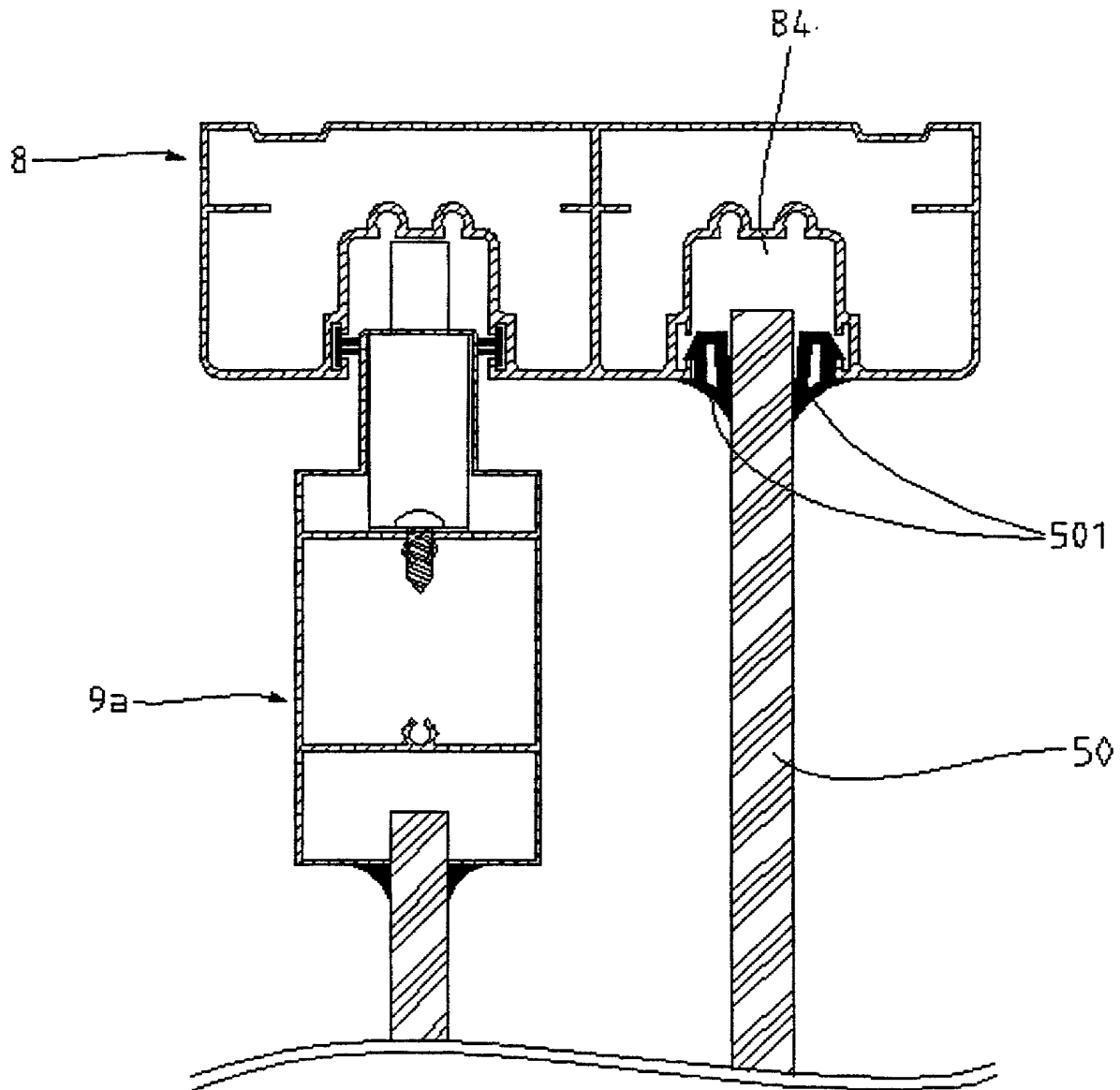
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FIG. 16



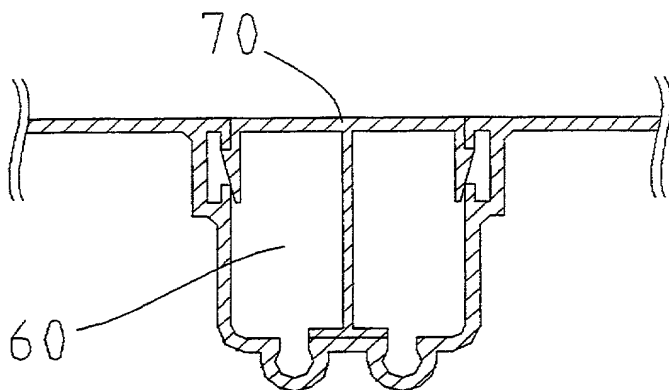
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FIG. 17



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FIG. 18



Attorney's Docket No. _____

DECLARATION FOR PATENT APPLICATION
(COMBINED WITH POWER OF ATTORNEY)
(ORIGINAL APPLICATION)

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name. I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

The Sliding Window and Door System of Filling a Rail _____

the specification of which is attached hereto unless box (a) or (b) is checked, in which case

- (a) ☐ the specification was filed on _____ as Application No. _____;
- (b) ☒ the specification was filed as PCT International Application No. PCT/KR00/01026 filed on September 8, 2000 and was amended under PCT Art. 19 on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I have identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America and filed less than 12 months (6 months for designs) prior to this United States application and of which I claim foreign priority benefits under Title 35, United States Code, Sec. 119, and I have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

EARLIEST FOREIGN APPLICATION, AND ALL FOREIGN
APPLICATIONS FILED MORE THAN 12 MONTHS (6 MONTHS FOR DESIGN)
PRIOR TO THIS U.S. APPLICATION

| <u>Country</u> | <u>Application No.</u> | <u>Date of Filing</u> (MM/DD/YY) |
|----------------|------------------------|-------------------------------------|
| Korea | 1999/38490 | 09/10/1999 |

As a named inventor, I hereby appoint the practitioners associated with Customer Number 007812 (John Smith-Hill, Reg. No. 27,730 and Daniel J. Bedell, Reg. No. 30,156) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting

Send correspondence to the correspondence address associated with Customer Number 007812.

I am signing this power of attorney in order that the Patent and Trademark Office will correspond with the practitioners identified in the power of attorney in proceedings before the Patent and Trademark Office, and I do not intend that the power of attorney in itself create an attorney/client or other fiduciary relationship with Smith-Hill and Bedell, P.C. or any of the identified practitioners.

I hereby authorize the practitioners that I have appointed to accept instructions regarding this application and the resulting patent from MUTUAL Intellectual Property Law Office.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Title 18, United States Code, Sec. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first joint inventor Myung-shin PARK

Inventor's signature Myung-shin PARK
Date March 4, 2002 Country of Citizenship Korea
Residence Kyungki-do, Korea

Post Office Address 16-3 Gamjung-dong, Kimpo-si,
Kyungki-do 415-010, Korea

Full name of second joint inventor, if any _____

Inventor's signature _____

Date _____ Country of Citizenship _____

Residence _____

Post Office Address _____